AMENDMENTS TO THE SPECIFICATION

On page 6 after the paragraph ending on line 13, please delete the paragraph which was entered from the October 11, 2001 Amendment (or possibly from the January 10, 2002 Amendment which repeated this same amendment) and which starts with "Fig. 1B is ...".

On page 22 after line 25, please amend the first of the two paragraphs entered from the May 7, 2002 Amendment as follows.

Figures 9 and 10 depict another embodiment of the present invention, wherein the light source and the thermal energy source are separate elements. Figure 9 shows a hydrogen gas detector 30 in the absence of hydrogen, which comprises a light source 32, a thermal energy source 34 that is separate from the light source 32, an optical filter ~~36~~ 35, and a light detector 38~~, and~~ joined by an output signal transmission wire 42 to an output module 44. Figure 10 shows such hydrogen gas detector 30 in the presence of hydrogen. The optical filter ~~36~~ 35 is placed in proximity to the light source 32, so that the optical filter ~~36~~ 35 is illuminated with light from the light source 32. Additionally, the optical filter ~~36~~ 35 is operatively coupled to the thermal energy source 34, so that the optical filter ~~36~~ 35 is heated by the thermal energy source 34 to an elevated temperature, at which the hydrogen gas sensor 30 ~~responses~~ responds to the presence of hydrogen and recovers in the absence of hydrogen much more rapidly. The light source 32 can be any light-generating ~~device~~ element, such as incandescent bulbs, light emitting diodes, ~~fluorescence~~ fluorescent lamps, electroluminescent lamps, optical lasers, and optical waveguides illuminated

by any such light-generating element. The thermal energy source 34 can be any heat-generating element that is separated from the light source 32, such as resistive wires, exothermic chemical reactions, ultrasonic radiation, acoustic radiation, microwave radiation, and laser radiation. The optical filter ~~36~~ 35 may comprise a rare earth metal thin film 36 that ~~is~~ may optionally be overlaid by a protective layer 37, which may in turn comprise a hydrogen-permeable material comprising a metal such as Pd, Pt, Ir, Ag, Au, Ni, Co, or an alloy thereof. The rare earth metal thin film 36 may also optionally be overlaid by a protective layer 37 which may comprise a hydrogen-permeable material that is doped with a dopant, such as Mg, Ca, Al, Ir, Ni, or Co for example~~, or a metal selected from the group consisting of palladium, platinum, and iridium~~. The spatial arrangement of the light source 32, the thermal energy source 34, and the optical filter ~~36~~ 35 is only exemplary in Figures 9 and 10, and shall not be construed to limit the broad scope of the present invention.

On page 22 after line 25, please amend the second of the two paragraphs entered from the May 7, 2002 Amendment and amended by the November 26, 2002 Amendment and by the June 9, 2003 Amendment as follows.

Figure 11 depicts another embodiment of the present invention, where the optical filter comprises a rare earth metal thin film deposited on an optical output surface of the light source. In Figure 11, the hydrogen gas detector 50 comprises a light source ~~32~~ 52 having an optical output surface 53, a thermal energy source 54 that is separate from the light source 52, and a light detector 58

joined by an output signal transmission wire 62 to an output module 64. A rare earth metal thin film 56, which functions as the optical filter, is deposited on the output surface 53 of the light source 52. ~~Said~~ The rare earth metal thin film 56 may comprise a rare earth metal selected from the group consisting of trivalent rare earth metals that are reactive with hydrogen to form both metal dihydride and metal trihydride reaction products, and such metal dihydride and metal trihydride reaction products have differing optical transmissivity. The rare earth metal thin film 56 is heated to an elevated temperature by ~~a~~ the thermal energy source 54 ~~that is separate from the light source 52~~. The rare earth metal thin film 56 ~~is also~~ may optionally be overlaid by a protective layer 57, which may comprise a hydrogen-permeable material comprising a metal such as Pd, Pt, Ir, Ag, Au, Ni, Co, or an alloy thereof. The rare earth metal thin film 56 may also optionally be overlaid by a protective layer 57 which may comprise a hydrogen-permeable material that is doped with a dopant, ~~that is doped with a dopant~~ such as Mg, Ca, Al, Ir, Ni, ~~and~~ or Co for example~~, or a metal selected from the group consisting of palladium, platinum, and iridium~~.